

## Description of Number Series (Module 12)

The purpose of this module was to broaden the content domain currently assessed in the HRS to include "fluid intelligence." The specific purpose was to see if we could achieve reasonably informative test scores by using a small subset of items from the Number Series task adapted from the new WJ III using adaptive testing methodology. More detail about the rationale for, development of, and administration details of this task is available in the HRS/AHEAD Report [Documentation of Cognitive Functioning Measures in the Health and Retirement Study \(DR-006\)](#), Ofstedal, Fisher, and Herzog (2005).

A random sub-sample of HRS respondents was selected and asked to complete the Number Series module at the end of the standard HRS survey. The Number Series test was designed so that each respondent would be asked no more than six test items (i.e., the number of items that we estimated could be completed in the three-minute time frame). The full information in the pattern of responses provided by each respondent was used to create a score on the W-scale (logit metric) based on the scoring method for the original WJ III test. This variable, called JVNScore, represents the respondent's performance on the task where higher scores indicate higher performance on the task. The W scale is a transformation and combination of the Rasch log ability and easy scales ( $W=9.1024 b + 500$ ). The procedure for developing the transformation was based on the analysis of actual data representing a wide range of ages. In this metric, there is no need for negative numbers or decimal fractions, and the same set of numbers can be used for expressing both item difficulty and a person's ability. This also means that the difference between a person's ability and item difficulty leads to predictive relationships about performance. For example, given an item score with the same W difficulty, the person has a 50% chance of answering correctly. However, given an item whose W-difficulty is 10 points higher, the person has only a 25% chance of answering it correctly. Please refer to [Documentation of Cognitive Functioning Measures in the Health and Retirement Study \(DR-006\)](#) for more information.

Other variables include the starting point within the module (JVNSTART) which ranges from 1-4 (where 1= the lowest possible starting point and 4=the highest possible starting point as determined by level of education and performance on the Serial 7s task), the number of questions asked of each respondent (JVNASK), and the number of items answered correctly (JVNCRRCT).